

Baker

December 12, 1994

Commander
 Atlantic Division
 Naval Facilities Engineering Command
 1510 Gilbert Street (Building N-26)
 Norfolk, Virginia 23511-2699

Baker Environmental, Inc.
 Airport Office Park, Building 3
 420 Rouser Road
 Coraopolis, Pennsylvania 15108

(412) 269-6000
 FAX (412) 269-2002

Attn: Ms. Linda Saksvig, P.E.
 Code 1823

Re: Contract N62470-89-D-4814
 Navy CLEAN, District III
 CTO-0249, Preparation of RI/FS Project Plans for
 Operable Unit No. 9, MCB Camp Lejeune, North Carolina

Dear Ms. Saksvig:


Enclosed for your review are three copies of the Draft Final Sampling and Analysis Plan for Operable Unit No. 9. Previously, Baker submitted the Draft Final RI/FS Work Plan and Health and Safety Plan under separate cover. Copies of this report have been distributed to EPA Region IV, the North Carolina DEHNR, MCB Camp Lejeune, NEHC, and to the TRC members accordingly. Comments to this document are due to Baker no later than January 13, 1995.

Also, Baker has prepared responses to comments submitted by EPA Region IV, NEHC, and the North Carolina DEHNR. These responses are included under Attachment A of this letter. The comments are also included as part of Attachment B. The responses are provided on the enclosed disc under the file name "RESP249" for your convenience (Word Perfect 5.1).

Baker is pleased to have the opportunity to provide you with engineering services at MCB Camp Lejeune. If you have any questions or comments regarding the referenced project, please do not hesitate to contact me at (412) 269-2063, or Mr. Raymond Watras at (412) 269-2016.

Sincerely,

BAKER ENVIRONMENTAL, INC.

for 
 Daniel L. Bonk, P.E.
 Project Manager

RPW/DLB/ldq

Attachments/Enclosures

cc: Ms. Lee Anne Rapp, Code 183 (w/o enclosure)
 Ms. Beth Collier, Code 02115 (w/o enclosure)
 Mr. Neal Paul, MCB Camp Lejeune (2 enclosures)



A Total Quality Corporation

Attachment A
Response To Comments on the
Draft RI/FS Project Plans
MCB Camp Lejeune, North Carolina

**Response to Comments Submitted by EPA Region IV on the
Draft RI/FS Work Plan for Operable Unit No. 9, MCB Camp Lejeune
Comment Letter Dated September 28, 1994.**

Response to General Comments

1. Section 2.3.1 (Page 2-11) clearly defines the boundary of Site 73. Site 73 encompasses the Amphibious Vehicle Maintenance Area (AVMA) as well as the immediate surrounding area. Approximately 80 percent of the site area is the AVMA complex. Some figures, including Figure 3-2, are titled Amphibious Vehicle Maintenance Area due to the information presented on the figures. These figures will not be changed and do not warrant confusion by the Project Team. Some of the figures were prepared as part of other previous investigations and are included in the Work Plan for convenience without modifying the title.
2. The noted inconsistency regarding the timeframe for allowing the bentonite seal to hydrate has been revised in the SOP to 8 hours.

Response to Specific Comments

1. In some cases, the suite of parameters sampled for during previous investigations was not clearly defined in the background documents (i.e., the background document only detailed what types of contamination were found at the site). Nevertheless, the referenced pages were revised to include the suite of parameters tested for when this information was available.
2. Site 65 is flat. Upon review of CADD drawings, only one contour line was noted. This contour line runs parallel to a roadway. Therefore, this figure was not revised since adding this contour would present no new information.
3. The boundary of Site 73 is clearly defined in the text on Page 2-11. Approximately 95 percent of Figure 2-10 is representative of Site 73; therefore, adding a "boundary line" is not cost effective nor does it present any new information that helps to define the site.
4. Groundwater flow direction throughout the site is believed to vary due to physical features such as site topography and the influence of groundwater discharge areas (e.g., Courthouse Bay, tributaries to Courthouse Bay, etc.). Since no comprehensive study has been conducted over the entire area, groundwater flow direction cannot be accurately predicted. The RI report will provide detailed potentiometric contour lines representing groundwater flow patterns.
5. A background soil database consisting of approximately 25 samples is available for comparing site specific findings to what may be present in background (this comparison is useful primarily for inorganic constituents and pesticides, since pesticides are widespread throughout MCB Camp Lejeune). The 25 samples were collected from areas throughout the base where no known disposal or military operational activity occurred. Therefore, no additional background samples have been proposed.
6. This sentence has been revised to indicate "13" borings.
7. Please see response No. 5, which states why background samples are not necessary.

8. The comment has been incorporated as stated. "Analyte-free/organic free" water will be (as is the current practice) used to prepare equipment rinsate blanks.
9. This definition has been revised. Two field blanks will be collected. One will use analyte-free/organic free water (EPA Region IV requirements). The second blank will be comprised of source water (NEESA requirement).
10. Upgradient well water will be discharged onto the ground. This water is not expected to be contaminated based on the usage of the area where the wells will be installed. If the water is determined to be contaminated, the discharge of this water will not result in additional site risks. Discharged water will infiltrate to the water table, which is only 5 or 10 feet below ground surface. In addition, if groundwater contamination results in excess human health or environmental risks, or if the contaminant concentrations exceed ARARs, then remediation will be evaluated. This is cost effective and in accordance with EPA guidance for IDW management.
11. Disagree with the comment. The comment to containerize all of the IDW is in direct opposition to EPA guidance for IDW management, which stress the minimization of IDW generation. In addition, EPA guidance suggests leaving the IDW at the site where, if necessary, the IDW will be taken care of during remediation.

Previous soil results show so little contamination at Site 65 that containment of soil cuttings, etc. is not cost effective or practical. Backfilling the boreholes or test pits with soil would not result in excess site risks. In addition, if debris is encountered during test pitting, the debris will be removed and properly disposed in accordance with State policy.

With respect to Site 73, backfilling of contaminated soil will not result in additional site risks. It should be noted that areas of contamination that result in excess human health or environmental risks will be required to be remediated in accordance with CERCLA or State law. Therefore, backfilled soil or test pit material will eventually be remediated, if warranted.

With respect to groundwater, the only contamination detected during previous investigations at Site 65 involved metals, which were likely elevated due to suspended solids in the samples (dissolved metals were not elevated). Therefore, to containerize this water would not be cost effective or practical. However, at Site 73, groundwater will be containerized since previous results due indicate significant contamination and discharge of groundwater at Site 73 may result in additional site risks or contamination to soil.

12. Site 65 is level. The CADD drawings of this site only depict one contour line, which is located near the road. Adding this line to the drawing will not result in determining surface water or groundwater contaminant pathways. In addition, the heavy equipment training area is operational and therefore, the topography of much of the study area will change to some degree on a weekly basis. These pathways will be illustrated and discussed in the RI report following additional collection of site information.
13. Unfiltered samples will be collected as they have been for the past four years. Various tables in the FSAP and QAPP indicate that both dissolved and total metals analysis will be performed.
14. A sentence has been added per the comment.

15. The VOA vials are pre-preserved by the laboratory.
16. Although the SOP indicates plastic or stainless, all surface soil samples collected during the investigations at MCB Camp Lejeune are done so using stainless steel trowels.
17. The timeframe noted in the SOP is incorrect and has been marked as "8 hours."
18. The SOP figure has been "marked" to indicate two to three feet. The FSAP text is correct.
19. The comment has been incorporated into SOP 105.
20. EPA Region IV decon procedures are now included in this SOP.

**Response to Comments Submitted by the North Carolina DEHNR on the
Draft RI/FS Work Plan for Operable Unit No. 9, MCB Camp Lejeune
Comment Letter Dated September 22, 1994**

1. Recent groundwater purging and sampling techniques using a low-flow procedure have been successful in eliminating suspended solids from biasing the metals analysis. Nevertheless, one groundwater sample from each site will still be tested for TSS and TDS for purposes of supporting the FS and design.
2. The discrepancy has been corrected.
3. The last sentence has been revised. The point of the sentence is that the SI Work Plan, prepared by Halliburton/ NUS, states that batteries were disposed of at Site 65. However, there are no other background documents (e.g., Initial Assessment Study, internal memorandums, etc.) which indicate that batteries were disposed of at this site. Baker has unsuccessful in verifying this information from NUS due to personnel changes at NUS.
4. The photographs are quite large (24 by 36 inches) and therefore, have not been copied. Relevant information such as the site boundary are noted on Figure 3-1.
5. Separate figures have been included in appendix A.
6. Separate figures have been included in appendix A.
7. The "GW" designation in the text has been changed to "MW".
8. The paragraph currently indicates that the soil and groundwater contamination were focused at locations MW-03 and MW-07. No revision has been made.
9. This paragraph is intended to summarize previous investigations. The State has copies of all previous investigation reports. The RI report will provide a thorough analysis of analytical findings.
10. Please see Response No. 4.
11. Supply well A-5, which is located within the Site 73 study area, will be sampled. There are no plans to sample any of the surrounding wells near Site 65 since the previous SI indicated little groundwater contamination at the site. The closest supply well at Site 65 is 1,200 feet west of the site. In addition, there is existing data for the surrounding supply wells.
12. Figure 4-1 has been corrected.
13. The number of borings has increased to 48 since additional sampling locations will be required to investigate and report on USTs separately.
14. Table 4-4 has been corrected per the comment.
15. Table 4-5 has been corrected per the comments.
16. The paragraph has been revised to indicate that 29 borings will be converted into shallow monitoring wells. Additional wells were determined to be required since each UST will be investigated and reported separately.

**Response to Comments Submitted by MCB Camp Lejeune (Mr. Mark Barnes) on the Draft RI/FS
Work Plan for Operable Unit No. 9
MCB Camp Lejeune**

Draft RI/FS Health and Safety Plan

1. Semivolatile organic compounds has been added to the potential exposure concerns at site 73 in the Executive Summary.

Draft RI/FS Work Plan

1. Data collected from borings SB-12 and SB-14 will be utilized to determine whether the former pond area is contributing to groundwater and soil contamination. This is now indicated on Table 4-2.
2. MW-19 is proposed "upgradient" of the suspected solvent plume to ensure that this area is not contaminated and to help delineate the horizontal extent of the potential plume.
3. The rationale for wells MW-22 and MW-24 have been included on the revised table 4-3.
4. The soil boring drilled for well MW-28 is located southwest of the UST. Therefore, boring SB-03 does not need to be moved per the comment.
5. Groundwater flow near UST A10/SA-26 is believed to be westward toward the intermittent stream. Therefore, both proposed wells MW-02 and MW-03 are downgradient of the UST.

**Response to Comments Submitted by the Naval Environmental Health Center on the Draft HASP for
Operable Unit No. 9, Sites 65 and 73, Marine Corps Base Camp Lejeune, North Carolina
Comment Letter Dated September 9, 1994**

Specific Comments

1. Section 3.0, "Site Characterization"

- a. Section 3.2.1, The background information is based on reported disposal practices and the chemical hazards section is based on reported disposal practices and analytical results from preliminary investigative work. Polychlorinated biphenyl (PCB) and pesticides are associated with petroleum, oil and lubricant products and is consistent with the reported site background. For example, PCBS have been associated with high-heat resistant lubricants and pesticides were sometimes mixed with petroleum products for spraying applications.
- b. Section 3.2.2.3, Past experience evaluating noise levels of similar projects with limited drill rig and backhoe activity does not warrant Baker's Hearing Conservation Program to be included with the HASP. The verbiage in this section has been revised to reflect this experience.
- c. Section 3.2.3, This section will be changed to indicate that radiation disposal has not been reported at Site 65. The radiation monitoring action levels that create a work stoppage take background levels into account.
- d. Section 3.2.5.8, It is common in the safety profession to review potential worst case events and although an explosion hazard is not expected, site personnel should be aware of this potential. A sentence will be included to refer the reader back to 3.2.2.4, where explosive hazards were previously discussed.
- e. A site-specific hazard analysis for decontamination procedures has been included as Section 3.2.5.9, Task 10.

2. Section 5.0, "Environmental Monitoring":

- a. Section 5.1, "Personal Monitoring":
 - (1) The coal tar pitch volatiles permissible exposure limit was used to determine action levels with the Miniram because this compound has been detected in surface soils where dust may be generated during work activities, whereas, the cadmium is associated with sediment which would be less likely to be present in a dusty atmosphere. Table 3-1 identifies the potential source of the contamination.
 - (2) The PID action level is set at one meter unit above background in the breathing zone and is not based on coal tar pitch volatiles.
- b. Section 5.2, The action levels assigned for radiation monitoring are conservative and are designed to take the background readings into account.

- c. Standard industrial hygiene practices is to calibrate monitoring equipment, such as, air flow pumps before and after each use to determine the quantity of air that has passed through the sampling media. Baker is using real-time air monitoring equipment (Photo-ionizing detector, Miniram, and Oxygen/Combustible gas meter) and calibrating it according to manufacturer's recommendations. This equipment is used to give an almost immediate indication if certain chemicals may be present in the work area. This equipment is calibrated prior to each days use and additionally if the equipment begins operating erratic. This method has proven successful on numerous projects.
- 3. Section 6.2, "Site-Specific Levels of Protection"
 - a. When conducting investigative activities removing large quantities of soil from a former disposal site it is standard health and safety practice to take a conservative approach and protect against potential unknown chemical hazards with the aid of supplied air. Baker takes successful measures in implementing a Heat Stress Program by using such practices as, fluid replacement, weight loss detection, pulse rates, and rest cycles and to date has not experienced a heat stress incident during Level B activities.
 - b. PPE requirements for equipment decontamination will be included in the Draft Final HASP.
- 4. Section 10.0, "Medical Surveillance Requirements"
 - a. "Occupational health physician", "examining physician" and "attending physician" refers to the same person. The Draft Final HASP will use occupational health physician for any physician reference.
 - b. Refer to the above comment.
- 5. Attachment A, "Baker Environmental, Inc. Safety Standard Operating Procedures"
 - a. Hazardous noise levels are not expected during the site work designated for this project.
 - b. The reviewer's comments pertaining to cold stress are important and will be implemented into the Cold Stress SOP during the next SOP revision.

**Response to Comments Submitted by Mr. David Lilley of the North Carolina DEHNR on the Draft
Health and Safety Plan for Operable Unit No. 9, MCB Camp Lejeune, North Carolina
Comment Letter Dated September 13, 1994**

Draft RI/FS Health and Safety Plan

1. Section 3.2.2.3 has been revised in the Draft Final HASP to reflect the noise levels anticipated based on previous experience with similar projects.
2. The units for DDT and benzene will be corrected in the Draft Final HASP.
3. The photo-ionizing detector (PID) action levels are designed to prevent the use of an air-purifying respirator for longer than 15 minutes. The instantaneous peak concentration at which to stop work or upgrade to Level B will be changed from "> 10 meter units (mu) above background" to "> 5 mu above background" in the Draft Final HASP.
4. The corrected area code for the ambulance (off base) phone number will be presented in the Draft Final HASP.

Attachment B
Comments Submitted on the
Draft RI/FS Project Plans for
Operable Unit No. 9
MCB Camp Lejeune, North Carolina

State of North Carolina
Department of Environment,
Health and Natural Resources
Division of Solid Waste Management

James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
William L. Meyer, Director

Post-It™ brand fax transmittal memo 7671		# of pages > 5	
To	Don Bank	From	Linda Berry
Co.		Co.	
Dept.		Phone #	
Fax #	412 269 2002	Fax #	(904) 222 4805

September 22, 1994

Commander, Atlantic Division
Naval Facilities Engineering Command
Code 1823-1
Attention:

MCB Camp Lejeune, RPM
Ms. Linda Saksvig, P. E.
Norfolk, Virginia 23511-6287

Commanding General

Attention: AC/S, EMD/IRD
Marine Corps Base
PSC Box 20004
Camp Lejeune, NC 28542-0004

RE: Draft RI/FS Project Plans and Health & Safety Plan
for Operable Unit 9.

Dear Ms. Saksvig:

The referenced documents have been received and reviewed by the North Carolina Superfund Section. Our comments are attached. Comments on the Health & Safety Plan are attached as a memo from our Industrial Hygienist to myself. Please call me at (919) 733-2801 if you have any questions about this.

Sincerely,

Patrick Watters

Patrick Watters
Environmental Engineer
Superfund Section

Attachment

cc: Gena Townsend, US EPA Region IV
Neal Paul, MCB Camp Lejeune
Bruce Reed, DEHNR - Wilmington Regional Office

P.O. Box 27687, Raleigh, North Carolina 27611-7687 Telephone 919-733-4996 FAX 919-715-3605
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North Carolina Superfund Comments
Draft RI/FS Project Plans and Health & Safety Plan
Camp Lejeune Operable Unit 9

RI/FS Work Plan

1. General

Suspected metals contamination in the groundwater at other areas of Camp Lejeune had created a need to include Total Dissolved Solids (TDS) and Total Suspended Solids (TSS) analyses as part of the normal groundwater investigation procedure. However, recent revelations about a low-flow groundwater sampling technique may make these analyses unnecessary. If the TSS and TDS analyses are to be used, consider the following comments:

- Only one groundwater sample is to be analyzed for TSS and TDS. One TSS and TDS analysis may not provide the objective evidence necessary to demonstrate that the metals contamination in the groundwater is not a problem. See Section 4.4.1.3.2 of the Work Plan and Section 3.1.3.2 of the Sampling & Analysis Plan.
- Please explain why TSS and TDS analyses are being performed for Site 65 but not for Site 73. See Section 4.4.2.3.1 of the Work Plan and Section 3.2.3.1 of the Sampling & Analysis Plan.
- Table 4-1 does not show TSS and TDS analyses for either of the OU 9 sites. This comment also applies to Table 6-1 in the Sampling and Analysis Plan.

2. Page 2-7, Section 2.1.10

This section estimates the area of MCB Camp Lejeune at 170 square miles whereas section 2.1.1 uses a value of 236 square miles.

3. Page 2-9, Section 2.2.3

The last sentence of this section needs to be revised for clarity.

4. Page 2-11, Section 2.2.5

It would be helpful to include copies of some or all of these photographs in the Work Plan or the Sampling & Analysis Plan.

5. Page 2-12, Section 2.3.1

Aboveground storage tanks (ASTs) and underground storage tanks (USTs) are a significant factor at Site 73. It would be helpful to include a separate figure dedicated to showing the locations of these tanks.

6. Page 2-12, Section 2.3.3
If possible, please identify the locations of the USTs noted in the last paragraph of this section.
7. Page 2-13, Section 2.3.4.1
The "GW" well locations in this section are identified as "MW" on Figure 2-11.
8. Page 2-13, Section 2.3.4.2
It would be helpful to identify the locations of the TPH and BTEX contamination noted in the second paragraph of this section.
9. Page 2-14, Section 2.3.4.3
It would be helpful to identify the locations of the BTEX contamination noted in the first paragraph of this section.
10. Page 2-15, Section 2.3.4.4
It would be helpful to include copies of some or all of these photographs in the Work Plan or the Sampling & Analysis Plan.
11. Page 4-4, Section 4.4.1.3 and Page 4-7, Section 4.4.2.3
Please indicate if there are any plans to sample any of the supply wells in the vicinity of the OU 9 sites or if existing data is available.
12. Page 4-2, Section 4.4.1.2.1 and Figure 4-1
There are two soil boring locations on Figure 4-1 identified as 65SB05.
13. Page 4-6, Section 4.4.2.2.1
This section has a minor discrepancy in the number of soil borings proposed for Site 73. The first sentence indicates 43 borings while the description later in the paragraph discusses only 40. This was corrected in Section 3.2.2.1 of the Sampling & Analysis Plan.
14. Table 4-4
This table shows the groundwater remediation goal for copper as 7 ug/L. The NC groundwater standard for copper is 1000 ug/L.
15. Table 4-5
The following remediation goals should be revised to reflect NC environmental standards.

- Ethylbenzene	29 ug/L	NC groundwater std.
- Xylenes (total)	530 ug/L	NC groundwater std.
- Lead	15 ug/L	NC groundwater std.
- Chromium	50 ug/L	NC groundwater std.
- Lead	25 ug/L	NC surface water std.

Sampling and Analysis Plan

16. Page 3-7, Section 3.2.3:

This section states that 27 soil borings are anticipated to be completed as Type II monitoring wells for Site 73. Section 4.4.2.3 of the Work Plan indicates 24.

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09/28/94 15:01LANTDIV CODE 18
I.S. E.P.A. - W.D.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365
September 20, 1994CERTIFIED MAIL
RETURN RECEIPT REQUESTED

4WD-FFB

Ms. Linda Saksvig
Department of the Navy - Atlantic Division
Naval Facilities Engineering Command
Code 1023
Norfolk, Virginia 23511-6287

SUBJ: MCB Camp Lejeune - OU9
Draft RI/FS Work Plan

Dear Ms. Saksvig:

The Environmental Protection Agency has partially completed its review of the above subject document, dated July 29, 1994. Comments are enclosed.

If there are any questions or comments, please call me at (404) 347-3016 or 347-3555, VMX-6439.

Sincerely,

Gena D. Townsend
Gena D. Townsend
Senior Project Manager

Enclosure

cc: Mr. Neal Paul, MCB Camp Lejeune
Mr. Patrick Watters, NCDEENR

OPTIONAL FORM NO. 10-90

Post-It™ brand fax transmittal memo 7671

of pages 12

To <i>Dan Book</i>	From <i>Linda Saksvig</i>
Co. <i>Baker</i>	Co.
Dept.	Phone #
Fax # <i>412 269 7002</i>	Fax #

Printed on Recycled Paper

1

1.0 GENERAL COMMENTSDraft RI/FS Work Plan

1. The location and identification of Site 73 - have not been clearly defined in the Draft RI/FS Work Plan. Section 2.3 of the Draft RI/FS Work Plan identifies Site 73 as the Courthouse Bay Disposal Area, which is consistent with the site identification in the Final Site Management Plan for Camp Lejeune. However, in Figure 3-2 of the Draft RI/FS Work Plan, Site 73 is identified as the Amphibious Vehicle Maintenance Area which includes numerous above- and below-ground storage tanks, oil/water separators and vehicle wash racks.

Draft RI/FS Sampling and Analysis Plan

2. There are numerous inconsistencies between Section 5 which presents investigative procedures and Appendices A through S which outline standard operating procedures. For example, in Section 5.2 the text states that the bentonite seal will be allowed to hydrate for at least 8 hours before the completion of the wall. However in Appendix D, Section 5.1, the text states that the bentonite seal will be allowed to hydrate for at least 20 minutes before the completion of the wall, which is not in compliance with the Region IV ECB SOPQAM. These inconsistencies should be resolved.

2.0 SPECIFIC COMMENTSDraft RI/FS Work Plan

1. Pages 2-13, 2-14, 2-15, Section 2.3.4:
As part of the summary of previous site investigations at Site 73, please indicate the suites of parameters that were analyzed for during each study. The text lists the contaminants that were detected in samples collected during these investigations. However, no mention is made of whether other chemical parameter groups that could have been present at site were also analyzed for.
2. Figure 2-5:
In order to evaluate possible groundwater and surface water migration pathways, topographic contour lines should be shown on this figure.
3. Figure 2-10:

The boundaries for Site 73 should be shown on this map. It is not clear if Site 73 incorporates the entire Amphibious Vehicle Maintenance Area which includes numerous above- and below-ground storage tanks or only incorporates the area of suspected waste oil and battery acid disposal. (See General Comment No. 1)

4. Figure 2-10:

In order to evaluate groundwater flow direction beneath Site 73, potentiometric contour lines should be shown on this figure.

5. Page 4-2, Section 4.4.1.2.1:

The text provides the soil sampling scheme for Site 65. However, background samples have not been designated. Please identify which background samples will be used for comparison to samples collected at Site 65.

Draft RI/FS Sampling and Analysis Plan

6. Page 3-2, Section 3.1.2.1, Paragraph 5:

The text states that the soil investigation at Site 65 includes seven proposed soil borings. However, paragraph 1 of the same section states that 13 soil borings will be drilled. Please correct this inconsistency.

7. Page 3-2, Section 3.1.2.1:

The text provides the locations of proposed soil borings at Site 65. However, the text does not indicate which of these locations are upgradient of Site 65. Please provide this information.

8. Page 3-8, Section 3.3:

The text states that analyte-free water will be used for both the trip blanks and the equipment rinse blanks. Analyte-free/organic-free water is the accepted type of water for the preparation of these blanks.

9. Page 3-9, Section 3.3:

The text states that the two field blanks, collected to check ambient conditions, will be prepared using potable water for one set and deionized water for another set. Analyte-free/organic-free water should be used for the preparation of these blanks.

10. Page 3-10, Section 3.4.2:

The text states that groundwater generated during well development and purging of the upgradient wells will be discharged onto the ground. Since there is a possibility that this water may have been contaminated by other sources located upgradient from Sites 65 and 73, all water generated

during well development should be containerized and tested. All investigation-derived waste water determined to be hazardous should be appropriately transported and disposed of in a approved landfill as outlined in EPA's "Guide to Management of Investigation-Derived Wastes."

11. Table 3-2:
This table lists the investigation-derived waste management options for sites 65 and 73. The analytical results of samples previously collected at these sites indicated the presence of contaminated soils and groundwater. Therefore, all investigation-derived soil and groundwater waste should be containerized and labeled pending analytical results. Materials removed from test pits should not be placed back into the pits until the material has been tested and determined to be non-hazardous. This material can be temporarily stockpiled on plastic sheeting and covered until the material has been adequately tested. See Specific Comment No. 10.
12. Figure 3-1:
To evaluate possible surface water and groundwater contaminant pathways, topographic contour lines should be shown on this figure.
13. Page 5-10, Section 5.3.1:
The text refers to the procedure for filtering groundwater samples, but there is no indication that unfiltered groundwater samples will also be obtained. EPA Region IV requires that unfiltered groundwater samples be obtained for risk assessment purposes.
14. Page 5-10, Section 5.4:
Regarding the collection of surface water samples, the text should state that sampling personnel will stand downstream of the sample location in order to minimize the effects of disturbed sediment on the sample.
15. Page 5-10, Section 5.4:
It is not clear in the text if the Volatile Organic Analyses (VOA) sample bottles will be prepreserved. Please clarify.
16. Appendix A, SOP F102, Section 5.2:
The text states that surface soil samples can be collected with either plastic or stainless steel scoops or trowels. According to the Region IV ECB SOPQAM, all soil samples should be collected with stainless steel scoops or trowels.
17. Appendix D, SOP F103, Section 5.1:
The text states that the sodium bentonite seal will be allowed to hydrate for at least 20 minutes before further completion of the well. The Region IV ECB SOPQAM states that the

4

bentonite seal should be allowed to hydrate for 8 hours before further completion of the well.

18. Appendix D, SOP F103, Figure A-1:
This figure shows a monitoring well construction detail. In the figure, the bentonite seal is detailed to be 1 foot thick. However, in Section 5.1, the text states that the bentonite seal will be at least two to three feet thick. Please correct this inconsistency.
19. Appendix F, SOP F105, Section 5.3.2:
The text should state that, with the exception of samples that will be analyzed for volatile organic compounds, all soil samples will be thoroughly mixed before being transferred to the appropriate sample containers.
20. Appendix N, SOP F302, Section 5.1:
The text should list the specific step-by-step Region IV decontamination procedures for field sampling equipment.

From Mark Barnes -
322-4764

REVIEW COMMENTS
OPERABLE UNIT No. 9
SITES 65 AND 73

Draft RI/FS Health and Safety Plan

1. Executive Summary; potential exposure for site 73 should include semivolatile organic compounds.

Draft RI/FS Work Plan

1. Table 4.2; What is the rationale for borings SB-12 - SB-14?
2. Table 4.3; Why is MW-19 located upgradient of the area of suspected solvent contamination?
3. Table 4.3; What is the rationale for MW-22 - MW-24?
4. Figure 4.2; Recommend moving SB-03 south, south-west of the former UST at building A-13.
5. Figure 4.2; Recommend moving MW-02 south and MW-03 south of their present positions so they are downgradient of UST A-10/SA-26 and SA-16.

Post-It™ brand fax transmittal memo 7671		# of pages	1
To	Dan Bink		
Co.	Co. Linda Bink		
Dept.	Phone #		
Fax #	(412) 259-2002		

DAN,

Gene Townsend called w/ a comment on the DE ROD OU#10.
Make sure you put a table in w/ contaminants and
associated levels when you work up your final version.

Linda



DEPARTMENT OF THE NAVY

NAVY ENVIRONMENTAL HEALTH CENTER
2510 WALMER AVENUE
NORFOLK, VIRGINIA 23513-26175090.5
Ser 61:181/ 03216
09 SEP '94

From: Commanding Officer, Navy Environmental Health Center
To: Commander, Atlantic Division, Naval Facilities Engineering
Command, Code 1822, 1510 Gilbert Street, Norfolk, VA
23511-2699

Subj: MEDICAL REVIEW OF INSTALLATION RESTORATION PROGRAM
DOCUMENTS FOR MARINE CORPS BASE, CAMP LEJEUNE, NC

Ref: (a) Baker Environmental transmittal ltr of 29 Jul 94,
Contract #N62470-89-D-4814, CTO 0249

Encl: (1) Health and Safety Plan Review

1. As you requested in reference (a), we completed a medical review of the "Draft Health and Safety Plan for Remedial Investigation/feasibility Study of Operable Unit No. 9, Sites 65 and 73, Marine Corps Base, Camp Lejeune, North Carolina." Our comments are provided in enclosure (1).

2. We are available to discuss the enclosed information by telephone with you and, if necessary, with you and your contractor. If you require additional assistance, please call Ms. Mary Ann Simmons at (804) 444-7575 or DSN 564-7575, extension 477.

W. P. Thomas
W. P. THOMAS
By direction

Post-It™ brand fax transmittal memo 7671		# of pages
To	From	
Don Bank	Linda Bury	
Co.	Co.	
Dept.	Phone #	
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HEALTH AND SAFETY PLAN REVIEW

Ref : (a) 29 CFR 1910.120
(b) Navy/Marine Corps Installation Restoration Manual (February 1992)

General Comments:

1. The "Draft Health and Safety Plan, for Remedial Investigation/Feasibility Study of Operable Unit No. 9, Sites 65 and 73, Marine Corps Base Camp LeJeune, North Carolina" was prepared for LANTNAVFACENGCOM by Baker Environmental, Inc., and forwarded to the Navy Environmental Health Center on 1 August 1994. The document was dated 29 July 1994.
2. This review addresses both health and safety and emergency response sections of the plan.
3. The method used for this review is to compare the health and safety plan to the federal requirements under OSHA regulations (29 CFR 1910.120) and to Department of the Navy requirements under the "Navy/Marine Corps Installation Restoration Manual." See references (a) and (b) above. Deviations and/or differences in the plan from these two primary references are noted. A list of acronyms used in our comments is included as Attachment (1). Specific comments are noted below.
4. The overall quality of this plan is greatly improved over others we have reviewed by Baker Environmental, Inc.
5. The point of contact for review of the health and safety plan is Ms. Mary Ann Simmons, Industrial Hygienist, who may be contacted at (804) 444-7575, or DSN 564-7575, extension 477.

Specific Comments:

1. Section 3.0, "Site Characterization":

a. Section 3.2.1, "Chemical Hazards": This section states that the chemicals of potential concern at Site 65 are "a few organics (e.g., SVOCs, pesticides and PCBs) and a variety of inorganics (i.e., chromium, lead, etc.)." This listing, especially the PCBs and pesticides, does not appear to be consistent with the site background description found in Section 3.1.1, "Site 65 - Engineer Area Dump" which indicates this site was formerly used as a battery acid disposal area and a liquids (petroleum, oil and lubricant products) disposal area.

Enclosure (1)

b. Section 3.2.2.3, "Noise": This section indicates that elevated noise levels may be present due to drilling and other heavy equipment operations. A hearing conservation SOP should be included if this is found to actually be the case for this site.

c. Section 3.2.3, "Radiation Hazards": The first paragraph states that the potential for radiological disposal at Site 65 is minimal. There either is or is not a radiological hazard at this site. We recommend determining the naturally occurring radiation levels before starting work, and if levels are found in excess of those levels, the site is evacuated until the situation is thoroughly investigated by a radiation expert.

d. Section 3.2.5.8, "Test Pit/Trenching (Site 65)": The physical hazard of "explosion from contact with explosive/ignitable materials" is listed. This is the first indication that explosive hazards are anticipated. If this hazard actually is anticipated for this site, include additional information in the HASP.

e. Include a site-specific hazard analysis for decontamination procedures.

2. Section 5.0, "Environmental Monitoring":

a. Section 5.1, "Personal Monitoring":

(1) Consider basing the action level for the Miniram results on cadmium since its PEL is lower (0.005 mg/M³) than that of coal tar pitch volatiles (0.2 mg/M³).

(2) Since coal tar pitch volatiles do not have an ionization potential, according to the NIOSH *Pocket Guide to Chemical Hazards*, and thus cannot be measured by the PID, it would seem to be more appropriate to base the action level for PID readings on a volatile organic compound with an ionization potential, measurable by the PID.

b. Section 5.2, "Point Source Monitoring": Action levels are provided for radiation monitoring results. We recommend, before starting work, determining the naturally occurring background radiation levels, and that the site is evacuated if these levels are exceeded during the course of work.

c. Section 5.5, "Equipment Calibration and Maintenance" states that equipment is to be calibrated daily. Standard industrial hygiene practice is to calibrate instruments before and after each period of use.

3. Section 6.2, "Site-Specific Levels of Protection":

a. Level B PPE is specified for the "Test Pit/Trenching" task for Site 65. Earlier in the plan, Section 3.2.2.6, "Heavy Equipment," personnel are specifically prohibited from entering into trenches and are instructed to avoid walking within 2 feet of an open excavation. Based on this direction, the reason for using Level B PPE for this task is not

clear. While it is important to protect the employee from chemical hazards, it is also important not to expose them to additional physical hazards such as heat stress.

b. Include PPE requirements for personnel performing equipment decontamination.

4. Section 10.0, "Medical Surveillance Requirements":

a. Section 10.1, "General": Clarify the relationship between the occupational health physician and the examining physician.

b. Table 10-1, "Medical Surveillance Testing Parameters": The first footnote at the bottom of the page says that "the attending physician has the right to reduce or expand the medical monitoring on an annual basis as he/she deems necessary." If the occupational medicine physician and the examining physician are not the same person, it is unadvisable to independently change the examination contents established by the occupational medicine physician. If the examining physician feels the medical monitoring should be altered, he/she should consult with the occupational medicine physician before acting.

5. Attachment A, "Baker Environmental Inc, Safety Standard Operating Procedures":

a. If hazardous noise levels are expected during the site work, include a hearing conservation SOP.

b. SOP 6.0, "Cold Stress": This SOP does not include information regarding work-rest cycles, fluid replacement protocols, types of beverages to avoid, or a description of "latent (delayed)" symptoms of hypothermia.

ACRONYMS

ACGIH:	American Conference of Governmental Industrial Hygienists
AG:	Acid Gas
ATSDR:	Agency for Toxic Substances and Disease Registry
BBP:	Bloodborne Pathogen Program
CPR:	Cardiopulmonary Resuscitation
CRZ:	Contamination Reduction Zone
EIC:	Engineer-in-Charge
EPA:	Environmental Protection Agency
EZ:	Exclusion Zone
HASP:	Health and Safety Plan
HBV:	Hepatitis B Virus
HIV:	Human Immunodeficiency Virus
IPA:	Isopropyl Alcohol
LEPC:	Local Emergency Planning Committee
MSDS:	Material Safety Data Sheet
NIOSH:	National Institute for Occupational Safety and Health
NOSC:	Navy On-Scene Coordinator
NOSCDR:	Navy On-Scene Commander
OSHA:	Occupational Safety and Health Administration
OV:	Organic Vapor
PCB:	Polychlorinated Biphenyl
PEL:	Permissible Exposure Limit
PPE:	Personal Protective Equipment
PPM:	Parts per million
SOP:	Standard Operating Procedure
STEL:	Short Term Exposure Limit
TLV:	Threshold Limit Value

Attachment (1)

September 13, 1994

TO: Patrick Watters

FROM: David Lilley DBL

RE: Comments prepared on the Draft Remedial
Investigation/Feasibility Study Health and Safety Plan for
Operable Unit 9 (Sites 65 and 73), MCB Camp Lejeune, NC

After reviewing the above mentioned document, I offer the following comments:

1. Page 3-3, section 3.2.2.3: It is recommended that the noise levels in high noise areas be measured and the appropriate action as per 29 CFR 1910.95 be taken.
2. Table 3-1: The exposure limit for the DDT Series is given as 1 mg/kg; it should be 1 mg/m³.

The groundwater concentration for benzene is given as 17 ug/kg; it should be 17 ug/L.

3. Page 5-1: According to the manufacturer's literature, air purifying respirators should not be used to protect against vinyl chloride. Therefore, level C should not be used in areas where vinyl chloride may be present.
4. Page 8-3, phone number for ambulance (off base): The area code for the 455 exchange is now 910.

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INSTALLATION RESTORATION

UNITED STATES MARINE CORPS
ENVIRONMENTAL MANAGEMENT DEPARTMENT
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA



ATTN: LINDA BERRY

FAX #: (804) 322-4805

FROM: WALTER T. HAVEN (GEOLOGIST)

COMMENTS: COMMENTS FOR DU #9. NOTE THAT MOST OF
OUR COMMENTS HAD ALREADY BE ADDRESSED
AT ~~THE~~ OUR SAMPLING STRATEGY MEETING.

-THANK.

-WALT

IF THERE IS A PROBLEM WITH THIS TRANSMISSION, PLEASE CALL (910)
451-5063/5068. EXT 404 (DSN 484-5068) OUR FAX NUMBER IS (910)
451-~~5997~~ (DSN 484-~~5997~~)

PAGE 1 OF 7 PAGES

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**REMEDIAL INVESTIGATION/FEASIBILITY STUDY
WORK PLAN
OPERABLE UNIT NO. 9 (SITES 65 AND 73)**

**MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA**

CONTRACT TASK ORDER 0249

JULY 29, 1994

Prepared for:

**DEPARTMENT OF THE NAVY
ATLANTIC DIVISION
NAVAL FACILITIES
ENGINEERING COMMAND
Norfolk, Virginia**

Under:

**LANTDIV CLEAN Program
Contract N62470-89-D-4814**

Prepared by:

**BAKER ENVIRONMENTAL, INC.
Coraopolis, Pennsylvania**

2.1 MCB, Camp Lejeune, North Carolina

This section provides an overview of the physical features associated with MCB, Camp Lejeune, North Carolina.

2.1.1 Location and Setting

MCB, Camp Lejeune is located within the Coastal Plain Physiographic Province. It is located in Onslow County, North Carolina, approximately 45 miles south of New Bern and 47 miles north of Wilmington. The facility covers approximately 236 square miles. This includes the recent acquisition of approximately 64 square miles west of the facility within the Greater Sandy Run Area (GSRA) of the county. The military reservation is bisected by the New River, which flows in a southeasterly direction and forms a large estuary before entering the Atlantic Ocean.

The eastern border of MCB, Camp Lejeune is the Atlantic shoreline. The western and northwestern boundaries are U.S. Route 17 and State Route 24, respectively. The City of Jacksonville, North Carolina, borders MCB, Camp Lejeune to the north. MCB, Camp Lejeune is depicted in Figure 2-1.

The GSRA is located in the southeast portion of Onslow County, North Carolina, near the Pender-Onslow County border. The GSRA is approximately 31 miles northeast of Wilmington, North Carolina; 15 miles south of Jacksonville, North Carolina; and 5 miles northwest of the Atlantic Ocean. The GSRA is located south and west of MCB, Camp Lejeune, sharing a common boundary along Route 17 between Dixon and Verona.

Camp Lejeune consists of 12 identifiable developed areas. Of the developed areas, Hadnot Point comprises the most concentrated area of development. This area includes the organizational offices for the Host Activity and for the Headquarters, 26 Marine Amphibious Unit, as well as the Headquarters and regimental areas for the 2nd Division of the Marine Corps, 2nd Marine Amphibious Force, 6th Marine Amphibious Brigade, 22nd Marine Amphibious Unit, 24th Marine Amphibious Unit, the Central Exchange & Commissary and the Naval Dental Clinic Headquarters. Directly north of Hadnot Point are the family housing areas concentrated throughout the wooded areas of the central Complex and along the shores of the New River. Also located in this north central area are major personnel support land uses, including the newly-constructed Naval Hospital, school sites, recreational areas, as well as additional family housing areas (quarters developments, Midway Park and Tarawa Terrace I and II).

Marine Corps Base,

~~The~~ Camp Lejeune ~~Marine Corps Base~~ contains five other areas of concentrated development, all of which are much smaller in size and population than either Hadnot Point, MCAS, New River, or the Camp Geiger area. The oldest of these is the Montford Point area, which is bounded by the New River to the south and west and by Route 24 on the north. New development in Montford Point has been limited, with most of the facilities for troop housing, maintenance, supply and personnel support having been converted from their intended uses. A majority of the Base training schools requiring classroom instruction are located here and use surrounding undeveloped areas for training operations when required. The French Creek area located directly south of Hadnot Point is occupied by the 2nd Force Service Support Group (2nd FSSG). Its activities are directed toward providing combat service and technical support as required by Headquarters, II Marine Amphibious Force. Expansion of the French Creek Complex is constrained by the Ordnance Storage Depot explosives safety arc on the south and by the regimental area of Hadnot Point. Onslow Beach, located along the Onslow Bay, east of the New River Inlet, presents assets for amphibious training as well as recreational use.

Site 65 is a primarily wooded area located immediately west of the Marine Corps Engineer School which occupies property between Site 65 and the bay. The school is used for maintenance, storage, and operator training of amphibious vehicles and heavy construction equipment. The school also utilizes a several acre parcel located just east of Site 65 to conduct heavy equipment training activities.

2.2.2 Site Topography and Drainage

Site 65 is situated in a topographically high area that is gently pitched to the south-southeast with an average elevation of about 40 feet above mean sea level (msl). Stormwater runoff tends to drain radially to the east, south, and west, away from the site or collect in local surface depressions. Immediately east of Site 65 is the equipment training area which occupies the area between Site 65 and two small ponds located to the southeast. Portions of the area surrounding the ponds are marshy and wetland-like.

2.2.3 Site History

Site 65 reportedly operated from 1952 to 1972. Two separate disposal areas have been reported including: (1) a battery acid disposal area; and, (2) a liquids disposal area. There are no maps or figures which depict the location of the disposal areas, and neither area is currently discernible due to heavy overgrowth. Aerial photographs are available at the base Forestry Department for the years 1962, 1964, 1970, 1973, 1978, 1983, and 1989. The photos up through 1973 depict disturbed areas west of the Engineer School which represent perhaps the best available means for approximately locating the site. In addition, Camp Lejeune base maps, available via Computer-Aided Design Drafting (CADD), indicate the location of a burn area which was identified as part of Site 65 under the Initial Assessment Study (IAS) by Water and Air Research (WAR, 1983). Like the disposal area, the location of the burn area is not currently discernible from the surrounding landscape. Beginning in 1970, the area located immediately east of Site 65 where equipment training exercises are currently conducted, also appears to be disturbed in aerial photographs.

The types of liquids which were reportedly disposed at Site 65 include petroleum, oil, and lubricant products (POL). The IAS did not indicate that hazardous wastes were disposed at Site 65. Site Inspection (SI) Project Plans prepared by NUS Corporation (NUS, May 1991) identify both POL wastes and batteries as having been disposed at Site 65; however, the basis for the inclusion of batteries is not known as a reference was not provided.

2.2.4 Site Geology and Hydrogeology

The subsurface soil encountered during the SI consisted primarily of loose to dense, fine- to coarse-grained sand with some clay and traces of silt. Some debris was found in the samples obtained during drilling which consisted of glass chips, wood chips, and rusted metal. This observation correlates with the history of the site which was reportedly used for disposal of construction debris.

During the SI, groundwater was encountered at depths ranging from 5 feet to 13 feet below the ground surface (bgs). Based on static water levels, groundwater flow is to the south toward the New River.

3.1.2.2 Site-Specific Data Needs

Site 65 - Engineer Dump Area

- Determine the physical and chemical characteristics of surface and subsurface soil within the boundaries of Site 65, in the area downgradient of Site 65, in the adjacent heavy equipment training area, and in an upgradient location. This data is needed to determine the nature and extent of contamination (if any) in soil and to support a human health and ecological risk assessment and evaluation of remedial alternatives.
- Determine the extent of PCB contamination in the vicinity of existing soil boring 65SB02 where, during the SI, PCBs (230 ppb of Arochlor-1254) were detected at 12 to 14 feet bgs.
- ● Determine ^{the} ~~the~~ physical composition and chemical characteristics of the various piles of earth and debris located within the Site 65 boundary. This data is needed to afford an evaluation of the debris piles as a potential source of contamination, to support a human health and ecological risk assessment, and evaluation of remedial alternatives.
- Obtain surface water, sediment, fish and benthic samples from the surface water bodies (i.e., ponds, marsh, and intermittent stream) located east of the site. This data is needed primarily to support a human health and ecological risk assessment as well as to afford an evaluation of the presence or absence of contamination in these media.
- Obtain additional data regarding the presence or absence of contamination in shallow (i.e., at the water table surface) groundwater downgradient (south) of Site 65 and west of existing shallow monitoring well 65MW02A. A shallow monitoring well in this area is needed to add confidence that the downgradient perimeter of Site 65 has been sufficiently investigated.
- Obtain shallow groundwater data from the area east of Site 65 and west of the surface ponds. This data is needed to evaluate the environmental impact of ongoing activities at the heavy equipment training area. If contamination is identified in the surface water bodies west of Site 65, this data will be used to evaluate whether the source is Site 65 or the heavy equipment training area.
- Obtain shallow groundwater data from an upgradient location to provide for a comparison to data obtained from other locations potentially impacted by Site 65.
- Determine the chemical characteristics of the groundwater zone situated below shallow (water table surface) groundwater at three locations across the site including near the center of the suspected Site 65 disposal area, and downgradient and upgradient of Site 65. This data is needed to confirm the presence or absence of the vertical migration of contaminants from the shallow zone to a deeper zone. Ideally the deeper zone to be investigated should correspond to the upper-most screened

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**REMEDIAL INVESTIGATION/FEASIBILITY STUDY
HEALTH AND SAFETY PLAN
OPERABLE UNIT NO. 9
SITES 65 AND 73
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA**

CONTRACT TASK ORDER 0249

JULY 29, 1994

Prepared For:

**DEPARTMENT OF THE NAVY
ATLANTIC DIVISION
NAVAL FACILITIES
ENGINEERING COMMAND
Norfolk, Virginia**

Under the:

**LANTDIV CLEAN Program
Contract N62470-89-D-4814**

Prepared By:

**BAKER ENVIRONMENTAL, INC.
Coraopolis, Pennsylvania**

TABLE 8-1
EMERGENCY TELEPHONE NUMBERS

Facility	Phone Number On-Base Phone(1)	Phone Number Off-Base Phone(2)	Contact*
Security	4555	911 or (910) 451-4555	Response Operator
Fire (Courthouse Bay)	911 7221	(910) 451-7221	Response Operator
Fire (Hot Work Permit)	3004	(910) 451-3004	Fire Alarm Operator
Ambulance (On-Base)	911		Response Operator
Ambulance (Off Base)	(*9) 455-9119	(919) 455-9119 or 911	Response Operator
Hospital Emergency Room (On-Base)	911 or 4840, 4841, 4842	451-4840 451-4841 451-4842	Response Operator
Onslow County Hospital (Off Base)	(*9) 577-2240	(910) 577-2240	Response Operator
Emergency (One Call)	911	911	Response Operator
On-Scene Coordinator	911	(910) 451-5815	Fire Chief
Environmental Management Division (EMD)	5068	(910) 451-5068	Mr. Neal Paul Mr. Tom Morris Mr. Walt Haven
Public Works (Underground Utilities via EMD Contact)	5874	(910) 451-5874	Mr. Neal Paul
Duke Regional Poison Control Center	(*2) 1-800-672-1697	1-800-672-1697	Response Operator
National Response Center	1-800-424-8802	1-800-424-8802	Response Operator
CHEMTREC	1-800-424-9300	1-800-424-9300	Response Operator
ASTDR	1-404-639-0615	1-404-639-0615	Response Operator

(1) The following prefixes apply when using on-base telephones:

- *2 - operator assisted calls including 800 numbers
- *8 - long distance calls
- *9 - local calls

(2) When using the mobile phone, which is programmed for the Pittsburgh area, use the phone numbers (including area codes) for an off-base phone.